

AMENDMENTS TO THE CLAIMS

Without prejudice, please amend the claims as reflected in the following listing of claims, which will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 – 57 (cancelled)

58. (currently amended) A method for initiating nuclear fusion in a fusionable material, the method comprising ~~the steps of:~~

introducing ~~a quantity of~~ the fusionable material into a liquid filled vessel;

determining ~~the~~ a location of the fusionable material in ~~the~~ said liquid filled vessel; and

directing an acoustic pulse towards ~~the determined location of~~ the fusionable material at said location such that ~~the said~~ acoustic pulse ~~symmetrically~~ converges on the fusionable material ~~thus increasing and sufficiently increases~~ the temperature and pressure thereof ~~to a sufficient extent to initiate~~ nuclear fusion in the fusionable material.

59. (currently amended) The method ~~according to~~ claim 58, wherein directing comprises directing the said acoustic pulse ~~is directed to a~~ fixed location in ~~the said~~ vessel and ~~the step of determining the said~~ location of the fusionable material comprises determining whether the fusionable material is within a pre-determined distance from ~~the said~~ fixed location ~~before and further comprising~~ initiating the said acoustic

pulse when the fusionable material is within said pre-determined distance of said fixed location.

60. (currently amended) The method ~~according to~~ claim 59, further comprising the further step of actively directing the fusionable material towards ~~the~~ said fixed location.
61. (currently amended) The method ~~according to~~ claim 58, wherein directing said the acoustic pulse comprises initiating a plurality of independently generated acoustic pulses timed to ~~and directing the acoustic pulse comprises timing the initiation of the independently generated pulses to produce a composite converging acoustic pulse that converges on the~~ said ~~determined~~ location of the fusionable material.
62. (currently amended) The method ~~according to~~ claim 58, wherein ~~the quantity of fusionable material is buoyant in the liquid and the fusionable material is introduced into the~~ said liquid filled vessel at a lower end of ~~the~~ said vessel and allowed to rise under hydrostatic forces to a position proximate the center of ~~the~~ said vessel.
63. (currently amended) The method ~~according to~~ claim 62, wherein directing comprises directing said the fusionable material is introduced at a lower end of the vessel and ~~the acoustic pulse is directed towards the fusionable material when the fusionable material reaches said position has risen to a location proximate the center of the~~ said vessel.
64. (currently amended) The method ~~according to~~ claim 62, further comprising ~~the step of introducing~~ causing a flow in the liquid, ~~the flow for directing to direct~~ the fusionable material towards a desired location in ~~the~~ said vessel.

65. (currently amended) The method ~~according to~~ claim 64, wherein causing the said flow comprises aligning a direction of said flow ~~direction is aligned with the direction of the said~~ hydrostatic forces.
66. (currently amended) The method ~~according to~~ claim 58, wherein determining ~~the said~~ location of the fusionable material comprises determining a first location for the fusionable material and using ~~the~~ said first location to predict a future location of the fusionable material.
67. (currently amended) The method ~~according to~~ claim 58, wherein introducing the fusionable material ~~is introduced~~ comprises introducing the fusionable material in the form of a gaseous bubble.
68. (currently amended) The method ~~according to~~ claim 67, further comprising wherein the gaseous bubble is very small when it is introduced and the bubble is allowed to expand by rapidly reducing the pressure in the said vessel immediately prior to directing the said acoustic pulse ~~attowards the said gaseous bubble of fusionable material to cause said gaseous bubble to expand.~~
69. (currently amended) The method ~~according to~~ claim 58, further comprising containing ~~wherein the fusionable material is contained in a micro-balloon.~~
70. (currently amended) The method ~~according to~~ claim 58, wherein further comprising generating the said acoustic pulse is generated by causing a plurality of peripherally located pistons to strike striking the said liquid filled vessel[,] by accelerating said pistons from an initial position that is peripherally spaced apart from said liquid filled vessel.
71. (currently amended) The method ~~according to~~ claim 70, comprising controlling each of ~~the said~~ pistons ~~striking the vessel such that the said~~

~~generated~~ acoustic pulse converges to a desired location in ~~the~~ said
liquid filled vessel.

72. (currently amended) The method ~~according to~~ claim 70, further
comprising causing energy wherein a residual acoustic pulse energy
remaining in said acoustic pulse after the nuclear fusion has been
initiated is used to at least partially return at least partially recompress
the said pistons to said initial position.

73. (currently amended) The method ~~according to~~ claim 70, further
comprising wherein the fusion produces heat and using at least a
portion of ~~the~~ heat produced as a result of the nuclear fusion is used to
produce steam[[,]] and causing at least a portion of the said steam
being used to at least partially return said re-compress the pistons to
said initial position.

74. (currently amended) The method ~~according to~~ claim 73⁵⁸, wherein
~~the~~ further comprising using at least a portion of heat produced as a
result of the nuclear fusion to produce steam and using said steam to
~~portion of the steam not used to recompress the pistons is used to~~
drive a steam turbine for ~~converting the heat energy into~~ generating
electrical energy.

75. (currently amended) A nuclear fusion reactor apparatus comprising:

a vessel for containing a liquid;

an aperture in said vessel for introducing a quantity of fusionable
material into ~~the~~ said vessel;

a ~~fusionable material~~ tracking system for determining ~~the~~ a
location of the fusionable material in ~~the~~ said vessel; and

~~a pulse generation generator operable to generate and direct system for generating an acoustic pulse, the pulse being directed toward the determined~~said location of the fusionable material such that ~~the said~~ acoustic pulse ~~symmetrically converges on the fusionable material thus increasing and sufficiently increases~~ the temperature and pressure thereof ~~to a sufficient extent~~ to initiate nuclear fusion in the fusionable material.

76. (currently amended) The ~~reactor~~apparatus ~~according to~~of claim 75, wherein ~~the said~~ tracking system comprises ~~one or more an~~ ultrasonic ~~sensors~~ sensor for measuring ~~the said~~ location of the fusionable material.
77. (currently amended) The ~~reactor~~apparatus ~~according to~~of claim 75, further comprising a ~~fusionable material~~ positioning system ~~for operable to direct~~ directing the fusionable material to a desired location in ~~the said~~ vessel.
78. (currently amended) The ~~reactor~~apparatus ~~according to~~of claim 77, wherein ~~the said~~ positioning system comprises a plurality of ~~peripherally located jets~~ located peripherally about said vessel and oriented towards the center of the said vessel.
79. (currently amended) The ~~reactor~~apparatus ~~according to~~of claim 75, wherein ~~the said~~ pulse generation ~~system~~generator comprises a plurality of ~~independent acoustic pulse generators~~ operably configured to produce said acoustic pulse and wherein the said tracking system ~~provides~~ produces a plurality of signals ~~for timing the initiation of the operable to control said acoustic independent pulse generators such that the said acoustic pulse is directed toward the determined~~said location of the fusionable material.

80. (currently amended) The ~~reactor~~apparatus ~~according to~~of claim 75, wherein ~~the said~~ pulse generation ~~system~~generator comprises a plurality of ~~peripherally located~~ pistons located peripherally about said vessel, said pistons being operable disposed to strike the outside surface of the vessel thus generating~~generate~~ ~~an~~a~~said~~ acoustic pulse in the liquid by impacting the outside of said vessel.
81. (currently amended) The ~~reactor~~apparatus ~~according to~~of claim 80, wherein ~~the said~~ vessel is spherically shaped and ~~the plurality of~~said pistons are located to ~~strike~~impact ~~the said~~ vessel at a ~~plurality of~~ spherically symmetric locations.
82. (currently amended) The ~~reactor~~apparatus ~~according to~~of claim 81, wherein each of ~~the said~~ plurality of pistons is sized and actuated to ~~strike~~impact ~~the said~~ vessel with a substantially ~~identical~~ similar kinetic energy.
83. (currently amended) The ~~reactor~~apparatus ~~according to~~of claim 80, comprising a position sensor associated with each piston ~~for operable to provide~~ providing a feedback signal for controlling ~~the said~~ impact of each piston ~~on the vessel.~~
84. (currently amended) The ~~reactor~~apparatus ~~according to~~of claim 83, comprising a controller configured to ~~synchronize~~ control ~~the said~~ impact ~~impacts~~ of ~~the said~~ pistons such that ~~the said~~ acoustic pulse converges on a desired location in ~~the said~~ vessel.
85. (currently amended) The ~~reactor~~apparatus ~~according to~~of claim 80, comprising a heat exchanger in fluid communication with ~~the said~~ vessel for extracting ~~at least a portion~~some of the heat energy generated by the fusion.

- 86.** (new) The apparatus of claim **83**, wherein said position sensor comprises an optical fiber interferometer.
- 87.** (new) The method of claim **58**, wherein directing said acoustic pulse comprises initiating a plurality of independently generated acoustic pulses and further comprising controlling the amplitude of said independently generated pulses to produce an acoustic pulse that converges on said location of the fusionable material.